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09/971,903	10/04/2001	Raghu Challa	000063	4018

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Qualcomm Incorporated
Patents Department
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EXAMINER	
BAYARD, EMMANUEL	
ART UNIT	**PAPER NUMBER**
2631	

DATE MAILED: 09/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/971,903	CHALLA ET AL.	
	Examiner	Art Unit	
	Emmanuel Bayard	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16 and 18-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16 and 18-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This is in response to amendment filed 6/21/04 in which claims 1-2, 4-16 and 18-41 are pending. The applicant's amendments have been fully considered therefore but they are moot based on the new ground of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2, 4-15 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al Pub No 2002/0024992 A1 in view of Hutchison et al U.S. Patent No 5,790,589.

As per claims 1, 15 and 38-39 Ogawa discloses method of acquiring one or more pilots in a wireless communication system, comprising: searching for peaks in a received signal over a designated code space to provide a set of one or more candidate peaks (see col.2, paragraph [0022] and col.3, paragraph [0038]); processing each candidate peak to acquire the candidate peak (see col.2-col.3); and performing the searching and processing a plurality of times such that the searching for a next set of candidate peaks is performed in parallel with the processing for a current set of candidate peaks (see col.3, paragraphs, [0040], [0043], [0046]).

However Ogawa et al does not teach terminating the searching and processing early upon detection of pilot acquisition to reduce acquisition time.

Hutchison et al disclose ending the search function upon detection the pilot acquisition channel is functionally equivalent to the claimed (terminating the searching and processing early upon detection of pilot acquisition to reduce acquisition time) (see col.8, lines 11-17).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Hutchison into Ogawa as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

As per claim 2, the combination of Ogawa and Hutchison would include pipelining the searching and processing for different sets of candidate peak to shorten acquisition as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

As per claim 4, the combination of Ogawa and Hutchison would include the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence used to generate a pilot as to indicate whether the pilot channel would indeed be in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

As per claims 5, the combination of Ogawa and Hutchison would include wherein the designated code space is partitioned into a plurality of code segments, and wherein the searching is performed over each code segment as to indicate reacquisition of the pilot channel as taught by Hutchison (see col.8, lines 16-17).

As per claim 6, the method of Ogawa does include wherein the searching includes detecting for peaks over the designated code space to provide a set of detected peaks, and re-evaluating each detected peak to remove noise peaks and provide the one or more candidate peaks (see fig.2 elements 10-1, 10-2).

As per claim 7, the method of Ogawa does include wherein the searching is performed by a searcher and the processing is performed by one or more finger processors (see fig.2 element 11-1, 11-3).

As per claim 8, the method of Ogawa does include wherein the processing for each candidate peak in the current set is performed by a respective finger processor and the processing for all candidate peaks in the current set is performed in parallel (see fig.2).

As per claim 9, the method of Ogawa does include, wherein the searching is performed using a plurality of sets of parameter values for the plurality of times (see col.2, paragraph [0022], 0025]).

As per claim 10, The method of Ogawa et al includes wherein each set of parameter values includes a first value for coherent accumulation of despread samples and a second value for non coherent accumulation of pilot symbols (see col.6, lines 6-19).

As per claim 11, the combination of Ogawa and Hutchison would include, wherein the sets of parameter values having improved pilot detection performance for more likely operating conditions are used first as to indicate whether the pilot channel would indeed be in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

As per claims 12-13, the method of Ogawa et al includes, wherein the communication system is a CDMA system (see abstract).

As per claim 14, the combination of Ogawa and Hutchison would include W-CDMA or TS-CDMA as to accurately detect each pilot channel in the PN sequence based on a measures correlation energy.

Claim Rejections - 35 USC э 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 26, 30-32, 36-37 and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al Pub No: U.S. No 2002/0024992 A1 in view of Blessen et al Pub No 2002/0009064 A1.

As per claims 26 and 32, Ogawa teaches a demodulator in a wireless communication system, comprising: a searcher operative to search for peaks in a received signal over a designated code space to provide a plurality of sets of one or more candidate peaks ((see fig.2 and col.2, paragraph [0022] and col.3, paragraph [0038]); and one or more finger processors operative to process at least one of the plurality of sets of one or more candidate peaks to acquire the candidate peaks, wherein the one or more finger processors are operated in parallel with the searcher such that the finger processors process a current set of candidate peaks while the searcher searches for a next set of candidate peaks (see fig.2 elements 11-1, 11-2 and col.3, paragraphs, [0040], [0043], [0046]).

However Ogawa does not teach each of the one or more finger processors comprising a rotator.

Blessen et al teaches each of the one or more finger processors comprising a rotator. (see fig.3 element 310 and paragraph [0081-0083]).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Blessen et al into Ogawa as to allow the finger to continue to track the pilot channel accurately in frequency as taught by Blessen (see [0081]).

As per claims 30 and 36 the demodulator of Ogawa does include wherein each finger processor includes a frequency control loop operative to acquire the frequency of a candidate peak assigned to the finger processor (see fig.2 element 12).

As per claims 31 and 37, the demodulator of Ogawa would include wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) sequence used to generate a pilot as to allow the finger to continue to track the pilot channel accurately in frequency.

As per claim 40, the searcher Ogawa in combination with Blessen would include a plurality of sets parameters values for plurality of times as to allow the finger to continue to track the pilot channel accurately in frequency.

As per claim 41, The searcher Ogawa in combination with Blessen would include each sets of parameter values includes a first value representing a number of chips for coherent accumulation of despread samples and a second value representing a number ofchips for non-coherent accumulation of pilot symbols as to allow the finger to continue to track the pilot channel accurately in frequency.

As per claims 40-41, Ogawa does include a plurality of set of parameters (see figs. 2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 27 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over over Ogawa et al Pub No: U.S. No 2002/0024992 A1 in view of Blessen et al Pub No 2002/0009064 A1 and in further view of Hutchison et al PUb No 2002/00009064.

As per claims 27 and 33, Ogawa and Blessen in combination teach all the features of the claimed invention except terminate pilot acquisition upon detection of successful pilot acquisition.

Hutchison et al disclose ending the search function upon detection the pilot acquisition channel is functionally equivalent to the claimed (terminating the searching and processing early upon detection of pilot acquisition to reduce acquisition time) (see col.8, lines 11-17).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Hutchison into Ogawa and Blessen as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

Claim Rejections - 35 USC ∋ 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 16, 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belotserkovsky et al U.S. Patent NO 6,628,735 B1 in view of Hutchison et al PUb No 2002/00009064.

As per claim 16, Belotserkovsky et al teaches method of acquiring one or more pilots in a wireless communication system, comprising: partitioning a range of possible frequency errors for the pilots into a plurality of frequency bins (see figs.5, 7-8 and col.7, lines 35-67); evaluating each of the frequency bins to acquire the one or more pilots (see col.7, lines 50-67).

However Belotserkovsky does not teach terminating the evaluating upon detection of pilot acquisition.

Hutchison et al disclose ending the search function upon detection the pilot acquisition channel is functionally equivalent to the claimed (terminating the searching and processing early upon detection of pilot acquisition to reduce acquisition time) (see col.8, lines 11-17).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Hutchison into Belotserkovsky as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

As per claim 18, Belotserkovsky et al would include wherein the evaluating each frequency bin includes frequency translating data samples derived from a received signal to an approximate center of the frequency bin, searching for peaks in the received signal, based on the frequency-translated data samples, over a designated code space to provide a set of one or more candidate peaks, and processing each candidate peak to acquire the candidate peak as to

determine the maximum peak levels of each frequency bin as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

As per claim 19, Belotserkovsky et al would include pipelining the searching and processing for different frequency bins to shorten acquisition time as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

As per claim 20, Belotserkovsky et al would include wherein the searching for a next frequency bin is performed in parallel (see fig.5) with the processing for a current frequency bin as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence.

As per claim 21, Belotserkovsky et al would include wherein the searching includes detecting for peaks over the designated code space to provide a set of detected peaks, and re-evaluating each detected peak to remove noise peaks as to improve the quality of the communication system as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence.

As per claim 22, Belotserkovsky et al would include wherein the designated code space includes phases for all or a portion of a pseudo-random noise (PN) used to generate a pilot as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence.

As per claim 23, Belotserkovsky et al would include, wherein the searching is performed by a searcher and the processing for each candidate peak in a particular set is performed by a respective finger processor, and wherein the processing for all candidate peaks in the set are

performed in parallel as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence.

As per claim 24, Belotserkovsky et al would include wherein the frequency bins overlap as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence.

As per claim 25, Belotserkovsky et al teaches a method of acquiring one or more pilots in a CDMA communication system, comprising: partitioning a range of possible frequency errors for the pilots into a plurality of frequency bins (see figs.5, 7-8 and col.7, lines 35-67); evaluating each of the frequency bins to acquire the one or more pilots (see col.7, lines 50-67); a FFT is the same as the claimed (frequency translating data samples) (see fig. 6 element 126 and col.7, lines 29-30) derived from a received signal to an approximate center of the frequency bin, searching for peaks in the received signal, based on the frequency-translated data samples, over a designated code space to provide a set of one or more candidate peaks, processing each candidate peak to acquire the candidate peak (see col.9, lines 2-6); and pipelining the searching and processing for different frequency bins such that the searching for a next frequency bin is performed in parallel with the processing for a current frequency bin (see col.7, lines 45-67) (Note that FFT processor is know in the art to process different parallel frequency bins).

Belotserkovsky et al does not teach terminating the evaluating upon detection of pilot acquisition.

However Belotserkovsky does not teach terminating the evaluating upon detection of pilot acquisition.

Hutchison et al disclose ending the search function upon detection the pilot acquisition channel is functionally equivalent to the claimed (terminating the searching and processing early upon detection of pilot acquisition to reduce acquisition time) (see col.8, lines 11-17).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Hutchison into Belotserkovsky as to indicate whether the pilot channel would be indeed in the expected location in the PN sequence as taught by Hutchison (see col.8, lines 13-17).

Claim Rejections - 35 USC ∋ 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 28-29 and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa Pub No 2002/0024992 A1 in view of Blessen et al Pub No 2002/0009064 A1 and in further view of Van Stralen U.S. patent No 6,621,855 B1.

As per claims 28 and 34 Ogawa and Blessen in combination teach all the features of the claimed invention except the demodulator of claim 26, wherein the searcher is operative to search for the next set of candidate peaks in a next bin of frequency errors while the one or more finger processors are operative to process the current set of candidate peaks found for a current bin of frequency offset.

Van Stralen teaches wherein the searcher is operative to search for the next set of candidate peaks in a next bin of frequency errors while the one or more finger processors are

operative to process the current set of candidate peaks found for a current bin of frequency offset (see col.1, lines 39-45 and col.5, lines 25-67 and col.6, lines 1-5).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Van into Ogawa and Blessen as to calculate the maximum response from the corresponding on of the frequency bin having the greatest absolute values as taught by Van (see col.5, lines 60-67 and col.6, lines 1-5).

As per claims 29 and 35, Ogawa Inherently includes the demodulator of claim 28, wherein the searcher and one or more finger processors each includes demodulator operative to down convert is functionally equivalent to the claimed (a rotator operative to frequency translate) data samples derived from the received signal. Furthermore implementing such teaching to an approximate center of the bin being operated on by the searcher or finger processor into Tran would have been obvious to one skill in the art as to calculate the maximum response from the corresponding on of the frequency bin having the greatest absolute values as taught by Van (see col.5, lines 60-67 and col.6, lines 1-5).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Heinonen et al U.S. patent No 6,700,866 B1 teaches a wireless and apparatus for use in obtaining frequency.

Marckok et al U.S. Patent NO 5,995,483 teaches an apparatus and method for upstream clock synchronization.

Wang U.S. patent No 6,728,203 B2 teaches a systems and methods for selecting cell.

Proctor et al Pub No 2002/0136274 A1 teaches a method for searching pilot signals.

Edilson U.S. patent No 6,519,277 teaches an accelerated selection of a base station.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Emmanuel Bayard
Primary Examiner
Art Unit 2631

8/27/04

EMMANUEL BAYARD
PRIMARY EXAMINER